

EDIBLE OYSTERS OF THE GENUS *CRASSOSTREA* SACCO 1897, ALONG THE RATNAGIRI COAST, MAHARASHTRA, INDIA¹

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Crassostrea rivularis, Ratnagiri coast

The edible oysters, which provide subsistence level fishery along the Indian coastline, are represented in the Ratnagiri region, Maharashtra State, by three species, namely *Crassostrea gryphoides*, *C. madrasensis* and *C. rivularis*. Based on an extensive series of material, a simple key for their identification is formulated. Information is also given on major synonymy and local distribution. *C. madrasensis* is reported for the first time from the northwest coast of India.

INTRODUCTION

Edible oysters are one of the major seafood delicacies along the Indian coastal belt. They also form a subsistence level of fishery, almost throughout the year. Yet, surprisingly little information is available on their species composition, seasonal abundance and ecology, particularly for the Konkan coast of Maharashtra State (west coast of India). Investigation was, therefore, initiated in and around Ratnagiri town, which is one of the major molluscan fishery centres along the Konkan coast. It was revealed that the study area harbours only one oyster genus i.e. *Crassostrea* Sacco, which is described hereunder:

Genus Crassostrea Sacco

Diagnostic features: Shell valves rather elongate and dissimilar in shape and size; left valve, representing the lower side, attached to the substratum, right valve almost flat, covering the left from above. Hinge without teeth, and ligament partly external. Adductor scar situated dorsolaterally. Sexes separate, but occasional instances of sex reversal and hermaphroditism not uncommon. Oviparous with external fertilization.

Remarks: The known eleven species of Indian edible oysters are all egg laying forms (= oviparous) and included presently under the genus *Crassostrea*: Durve (1967, 1973), Jones (1968), Imai (1971), Rao (1974, 1987). Early workers (Hornell 1910, 1918; Awati and Rao 1931) had erroneously placed them under genus *Ostrea*, which includes only larvae-releasing (= larviparous) forms. Of the 11 species, only 3 were recorded during our investigation, and can easily be distinguished by the following key:

KEY TO THE SPECIES OF GENUS *CRASSOSTREA* FROM THE RATNAGIRI COAST

1. Shell valves more or less uniformly round; left valve rather shallow and attached to substratum with its entire outer surface. Umbonal cavity quite shallow. Adductor muscle scar (oblong) whitish. Almost entire inner surface of shell whitish *Crassostrea rivularis* (Gould 1861)
- Shell valves rather irregular in shape; left valve considerably deep, cup-like and attached to substratum by only a small portion towards hinge. Umbo cavity quite deep. Adductor muscle scar (round or kidney shaped) either deep purplish-black or distinctly creamish 2
2. Shell oblong with purplish-black coloration along the margins of the valves. Adductor muscle scar round and distinctly purplish-black
..... *Crassostrea madrasensis* (Preston 1916)

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— Shell oval with almost entire inner surface creamish. Adductor muscle scar kidney shaped and distinctly creamish
..... *Crassostrea gryphoides* (Schlotheim 1813)

1. *Crassostrea gryphoides* (Schlotheim 1813)
Ostracites gryphoides Schlotheim, 1813:
6 (Type locality: Bay of Bengal).

Ostrea gryphoides Vredenburg, 1904: 174;
Awati & Rao, 1931: 6.

Crassostrea gryphoides Durve & Bal,
1961: 70; Durve, 1967: 173; Rao, 1974: 27;
1987: 1.

Common English Name: Indian backwater
oyster (West coast oyster).

Local, Marathi Name: Kaalav

Material examined: About 500 specimens,
size 3.70-16.0 cm, collected from various creeks
in and around Ratnagiri, namely Bhatya,
Sakhartar, Mirya, Purnagad, Saithawada, Jaitapur
from June 1995 to May 1996.

Remarks: *Crassostrea gryphoides* is
essentially an euryhaline species inhabiting bays,
lagoons, backwaters and creeks. In the open
waters, it is found to penetrate up to a depth of
7 m. It is the most common species of oyster in
the Ratnagiri region of the district, forming about
77% of the total oyster catch, with extensive beds
along the creeks. The shell colour tends to vary
with local ecological conditions.

2. *Crassostrea madrasensis* (Preston 1916)

Ostrea madrasensis Preston, 1916 (Type
locality: Ennur backwater, Madras) Awati and
Rao, 1931: 111; Gravely, 1941: 1; Paul, 1942: 1;
Satyamurthi, 1956: 68.

Ostrea cucullata Hornell, 1910: 25.

Ostrea virginica Annandale & Kemp,
1916: 329.

Ostrea virginiana Hornell, 1922: 97.

Ostrea virginiana var. *madrasensis* Moses,
1928: 548

Ostrea arakanensis Winckworth, 1931:
188.

Ostrea (Crassostrea) madrasensis Rao,
1956: 332.

Crassostrea madrasensis Rao, 1958: 55;
1974: 14; 1987: 1; Durve, 1967: 173.

Common English Name: Indian backwater
oyster (East coast oyster).

Local, Marathi Name: Kaalav.

Material examined: About 100
specimens, size: 3.7-16.2 cm, collected from
Bhatya, Sakhartar and Mirya creeks near
Ratnagiri from June 1995 to May 1996.

Remarks: Despite being an euryhaline
species like *Crassostrea gryphoides*, *C.*
madrasensis exhibits greater penetration into
open waters, to a depth of 17 m. So far, it was
known only from east and southwest coasts of
India (Alagarwami and Narasimham 1973).
This is, therefore, the first record of
C. madrasensis along the northwest coast of
India. The species is second in abundance along
the Ratnagiri waters, forming about 14% of the
total oyster catch. Large to medium size beds of
this species are known to occur in Bhatya,
Sakhartar and Mirya creeks. Their shell
coloration varies according to different localities.

3. *Crassostrea rivularis* (Gould 1861)

Ostrea rivularis Gould, 1861: 178 (Type
locality: China seas); Cahn, 1950: 12.

Ostrea discoidea Awati & Rao, 1931: 3.

Crassostrea discoidea Rao, 1958: 55;
Alagarwami & Narasimham, 1973: 654; Rao,
1974: 36.

Crassostrea rivularis Imai, 1971: 125;
Rao, 1987: 1.

Common English Name: Chinese oyster.

Local, Marathi Name: Kaalav.

Material examined: About 60 specimens,
size 5.4-11.5 cm, collected from Bhatya and
Sakhartar creeks near Ratnagiri from June 1995
to May 1996.

Remarks: *Crassostrea rivularis* appears
to be the least common of all local species,
forming about 9% of the total oyster yield of the

region. Its beds are located at Bhatya and Sakhartar creeks and in open waters it has restricted distribution, to a depth of 7 m only.

Conclusion: From the foregoing account, it appears that the Indian west coast backwater oyster *Crassostrea gryphoides* is the most common species inhabiting the Ratnagiri waters, followed by *C. madrasensis* and *C. rivularis* in order of abundance. This is also the first record of the Indian east coast backwater oyster *C. madrasensis* along

the northwest coast of India.

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